

INCH POUND

MIL-PRF-
XXXXX

15 January 1998

PERFORMANCE SPECIFICATION
CASE, CARRYING FOR M198/M119 FIRE CONTROL OPTICS

1.0 SCOPE

1.1 Scope. This specification covers the performance and verification requirements for a type of carrying case, designated as Case, Carrying for M198/M119 Fire Control Optics (See 6.1).

1.2 Classification. Items covered by this specification shall be of the following:

MIL-PRF-XXXXX, TYPE-1, CARRYING CASE, FIRE CONTROL FOR M198
MIL-PRF-XXXXX, TYPE-2, CARRYING CASE, FIRE CONTROL FOR M198 (ERLS)
MIL-PRF-XXXXX, TYPE-3, CARRYING CASE, FIRE CONTROL FOR M119
MIL-PRF-XXXXX, TYPE-4, CARRYING CASE, FIRE CONTROL FOR M119 (ERLS)

2.0 APPLICABLE DOCUMENTS.

2.1 General. The documents listed in this section are referenced in Sections 3 and 4 of this specification. This does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all the specified requirements as cited in Section 3 against the verification criteria listed in Section 4 of this specification.

2.2 Government documents.

2.2. Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document, should be addressed to: Commander, U.S. Army ARDEC, ATTN: AMSTA-AR-EDE-S, Picatinny Arsenal, New Jersey 07806-5000 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC

N/A

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

SPECIFICATIONS

FEDERAL

PPP-C-1752 - Cushioning Material, Polyethylene Foam

STANDARDS

MILITARY

MIL-STD-810 - Environmental Test Methods and Engineering Guidelines

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Bldg. 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government Documents. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

DRAWINGS

For M198:

11741101 - M137, Panoramic Telescope

11741626 - M138, Elbow Telescope

11741648-1 - M139, Alignment Device

For M119:

11741648-2 - M140, Alignment Device

12599167 - M137A1, Panoramic Telescope

12599180 - M90, Straight Telescope

For M198/M119- ERLS

TBD - Power Pack, Lithium Battery

(Copies of these drawings are available from the US Army Armaments Research, Development, and Engineering Center (ARDEC), AMSTA-AR-FSF-I, Picatinny Arsenal, N. J. 07806- 5000.)

2.3 Order of Precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3.0 REQUIREMENTS

3.1 First Article. When specified (see 6.2), in the contract or purchase order, a sample shall be subjected to First Article inspection in accordance with 4.3.1.

3.2 Design, materials, and manufacturing processes. Unless otherwise specified, the design, materials, and manufacturing process selection is the prerogative of the contractor as long as all articles submitted to the government fully meet the functional and operating requirements specified.

3.3 Government Furnished Material (GFM). The following listed equipment shall be provided as GFM for Cushion Inserts Verification (3.4.5), Interfaces Verification (3.5) and Environmental Drop test (3.8.3) use.

- a. M137 Panoramic Telescope - P/N: 11741101
- b. M138 Elbow Telescope - P/N: 11741626
- c. M139 Alignment Device - P/N: 11741648-1
- d. M140 Alignment Device - P/N: 11741648-2
- e. M137A1 Panoramic Telescope - P/N: 12599167
- f. M90A2 Straight Telescope - P/N: 12599180
- g. Lithium Battery Pack- P/N: TBD

3.4 Physical Design Requirements.

3.4.1. Physical Dimensions. The carrying case shall have dimensions of 20.0 ± 0.1 inches width by 8.3 ± 0.1 inches height and a maximum length of 22.0 inches. The dimension orientation is shown in Fig. 1, App. A.

3.4.2 Weight. The carrying case shall have a maximum weight of 20 lbs.

3.4.3 Assembly Hardware. All hardware shall have a dull-finish stainless steel. At a minimum, the case shall have the following features as shown in Fig.1, App. A.

- a. One (1) Handle
- b. Hinge Assembly
- c. Two (2) Mounting Clamp Assemblies
- d. Four (4) Bumper Assemblies
- e. One (1) Pressure Relief Valve

3.4.4 Gasket. The carrying case shall have a continuous watertight gasket closure.

3.4.5 Cushion Inserts. One of the following sets of cushion inserts shall be provided with each case. The cushion set for the applicable howitzer shall be identified in the solicitation. The cushioning material shall be unicellular polyethylene foam, with a density of 2.0 to 3.0 lbs/cu ft, Type I, Class 2, Spec PPP-C-1752 or equivalent. The cushions must be secured to the interior of the case by means commonly utilized by the contractor which will resist removal by pulling.

- a. Cushions for the M198 case shall be in accordance with Fig. 2, App. A. (TBD)
- b. Cushions for the M198 case (ERLS) shall be in accordance with Fig. 3, App.A (TBD)
- c. Cushions for the M119 case shall be in accordance with Fig. 4, App. A. (TBD).
- d. Cushions for the M119 case (ERLS) shall be in accordance with Fig. 5, App.A (TBD).

3.4.6 Camouflage. The color and reflectance of all externally visible components of the carrying case shall contribute to field camouflage. The externally visible color of the case shall be of a non-reflective dark green or black.

3.5 Interfaces.

3.5.1 External Interface. The carrying case envelope dimensions as defined in 3.3.1 are needed to ensure no interference when the case is inserted into the carriage trail container of the applicable howitzer.

3.5.2 Internal Interface. The cutout configurations and dimensions of the cushion inserts shall be compatible with the physical configuration of the fire control optical equipment. There shall be adequate spacing between each compartments and the case walls to prevent the fire control optical instruments from impacting each other and with the case walls and causing damage.

3.5.3 Human Factor Engineering. The physical size of the carrying handle and the operability of the clamp assemblies shall be compatible with the operator wearing MOPP IV protective gloves.

3.6 Reliability. The carrying case shall perform at least 1000 open/close operations without failure. The handle of the carrying case shall perform at least 500 lifting operations 2.5 ± 0.5 feet above the ground with the case containing twice the weight of the applicable fire control optical instruments without failure.

3.7 Durability. The carrying case shall retain manufactured physical integrity while withstanding the rough handling normally exerted on the carrying case in field operations. The case shall not suffer damage or loss of performance when subjected to 10 drops and 25 drops each with six different orientation from a height of 3 feet onto a smooth concrete surface and dirt ground respectively.

3.8 Operating Environment Requirements.

3.8.1 Low Temperature. The carrying case shall operate at -40° F.

3.8.2 High Temperature. The carrying case shall operate at $+150^{\circ}$ F.

3.8.3 Drop. The carrying case shall not suffer damage or loss of performance after 3 drops from a height of three (3) feet onto a smooth concrete surface.

3.8.4 Waterproofness. The carrying case shall not leak when submerged in water for one hour with the water level 0.5 to 3.0 inches above the upper surface of the carrying case.

3.8.5 Fungus resistance. The carrying case shall show no evidence of damage, deterioration or profuse growth when subjected to Method 508.4, MIL-STD-810 test for 28 days.

3.9 Marking. Each carrying case shall have the markings respective to the part number specified in the solicitation as indicated in Table I. The markings may be stenciled, heat-inlaid, or applied by any other method commonly used by the contractor in contrasting colors relative to the background color which will not become discolored, degraded, or illegible in the normal operating environment of the case. The “ID MARKINGS” letter height shall be a minimum of 0.75 inches. Identification of the case cover shall be designated by arrows and “UP”, as shown in Fig. 1, App. A, to identify the orientation of the case.

TABLE I. MARKING REQUIREMENTS
(SEE FIG. 6 APP. A FOR LOCATION OF MARKINGS)

DESCRIPTION	M198	M198 (ERLS)	M119	M119 (ERLS)
ID MARKINGS	CASE,CARRYING P/N - TBD	CASE,CARRYING P/N - TBD	CASE,CARRYING P/N - TBD	CASE,CARRYING P/N - TBD
SPECIAL WARNING MARKINGS	RADIOACTIVE See Fig.7 App. A	LITHIUM BATTERY See Fig.8 App. A	RADIOACTIVE See Fig. 7 App. A	LITHIUM BATTERY See Fig. 8 App. A
INSTRUCTION PLATES	See Fig. 9 App.A	See Fig. 9 App.A	See Fig. 9 App.A	See Fig. 9 App. A

4.0 VERIFICATION

4.1 Classification of Inspections. Inspection requirements are classified as follows:

- a. First Article Inspection (see 4.3.1).
- b. Conformance Inspection (see 4.3.2).

4.2 Verification Methods. The types of verification methods included in this section are visual inspection, measurement, full tests, and similarity to previously approved or previously qualified designs.

4.2.1 Verification Alternatives. The manufacturer may propose alternate test methods, techniques, or equipment, including the application of statistical process control (SPC), tool control, or cost effective sampling procedures, to verify performance. Acceptable alternative verification approaches shall be identified in the contract.

4.3 Verification Classification.

4.3.1 First Article Inspection. First Article inspection shall be performed on the first three (3) production representative units of an order (or whenever else the contract specifies) when a first article sample is required (3.1). This inspection shall include the verification listed in Table II.. If the requirements stated in Table II are not met, the First Article Test shall be rejected.

4.3.2 Conformance Inspection. Conformance inspection shall include those examinations and tests from Table II as defined in the contract. One item out of the first 50 produced and one out of each 100 produced thereafter shall be selected at random. The sample shall meet the conformance inspection tests. Unless otherwise specified in the contract, the item shall be returned to the lot after successful completion of testing. If the requirements stated in Table II are not met, the production shall be stopped until the problems are resolved.

4.3.3 Order of Verification. The inspection sequence may be in any order.

4.3.4 Physical Design Requirements Verification.

4.3.4.1 Dimensional Verification. Measure each carrying case against the limits as defined in 3.4.1 using Special Measuring Test Equipment (SMTE).

4.3.4.2 Weight Verification. Weigh each carrying case against the limits as defined in 3.4.2 using SMTE.

4.3.4.3 Assembly Hardware Verification. Visually inspect and operate hardware as defined in 3.4.3.

4.3.4.4 Gasket Verification. Visually inspect gasket to verify continuity and closure.

4.3.4.5 Cushion Inserts Verification. The cushion inserts shall be verified to comply with 3.4.5. Manually inspect for the security of cushion. Material certificate of conformance shall be submitted to verify 3.4.5

4.3.4.6 Camouflage Verification. Visually inspected to comply with 3.4.6.

4.3.5 Interfaces Requirement Verification.

4.3.5.1 External Interface. The dimension shall be measured using SMTE to comply with 3.5.1.

4.3.5.2 Internal Interface. Manually insert the GFM into the case to comply with the requirements as defined in 3.5.2. An engineering analysis shall be performed to demonstrate that adequate spacing exists between each compartment and the case walls to prevent the fire control optical instruments from either impacting each other or the case walls and causing damage .

4.3.5.3 Human Factor Engineering. The operator shall be wearing the MOPP IV protective

gloves specified in 3.5.3 (on both hands). Lay the case flat, open and close the case a minimum of five times. The case shall open and close freely. The latch shall be moved from the closed to open to closed position without undue force. Pick up the case by the handle. The handle shall be securely attached to the case. The case material shall no evidence of delamination, distortion, cracking, or other irregularities following the test.

TABLE II. REQUIREMENTS/VERIFICATION CROSS REFERENCE MATRIX

METHODS OF VERIFICATION

CLASSES OF VERIFICATION

N/A - Not Applicable

A - First Article Test

1 - Analysis

B - Conformance Acceptance

2 - Demonstration

3 - Examination

4 - Test

Section 3 requirements	Verification methods					Verif. Class		Section 4
	NA	1	2	3	4	A	B	
3.1	X							
3.2	X							
3.3	X							
3.4	X							
3.4.1				X		X	X	4.3.4.1
3.4.2				X		X	X	4.3.4.2
3.4.3			X			X	X	4.3.4.3
3.4.4				X		X	X	4.3.4.4
3.4.5		X		X		X		4.3.4.5
3.4.6				X		X		4.3.4.6
3.5	X							
3.5.1				X		X		4.3.5.1
3.5.2		X		X		X		4.3.5.2
3.5.3			X			X		4.3.5.3
3.6					X	X		4.3.6
3.7					X	X		4.3.7
3.8	X							
3.8.1					X	X	X	4.3.8.1
3.8.2					X	X	X	4.3.8.2
3.8.3					X	X	X	4.3.8.3
3.8.4					X	X	X	4.3.8.4
3.8.5					X	X		4.3.8.5
3.9			X			X	X	4.3.9

4.3.6 Reliability Verification. The carrying case will be subject to the reliability test to comply

with 3.5. The case will be manually opened, closed and lifted 3.0 feet off the the ground and set back down to meet the requirements specified in 3.5. The case shall open and close freely. The latch shall be moved from the closed to open position without undue force. The handle shall be securely attached to the case. The case material shall no evidence of delamination, distortion, cracking, or other irregularities following the test.

4.3.7 Durability Verification. The durability test shall be performed to meet the requirements in 3.6. After the test, the case shall open and close freely. The latch shall be moved from the closed to open to closed position without undue force. The handle shall be securely attached to the case. The case material shall no evidence of delamination, distortion, cracking, or other irregularities following the test.

4.3.8 Operating Environment RequirementsVerification.

4.3.8.1 Low Temperature. Subject a case to air temperature of -40°F for a period of one hour after internal temperature stabilization of the test item. At the end of the one hour period, while the case is at the -40°F temperature, open and close the case a minimum of five times. The case shall open and close freely. The latch shall be moved from the closed to open to closed position without undue force. Pick up the case by the handle. The handle shall be securely attached to the case. The case material shall show no evidence of delamination, distortion, cracking, or other irregularities. Caution shall be exercised during this test to avoid thermal shock.

4.3.8.2 High Temperature. Subject a case to air temperature of +150°F for a period of one hour after internal temperature stabilization of the test item. At the end of the one hour period, while the case is at the +150°F temperature, open and close the case a minimum of five times. The case shall open and close freely. The latch shall be moved from the closed to open to closed position without undue force. Pick up the case by the handle. The handle shall be securely attached to the case. The case material shall no evidence of delamination, distortion, cracking, or other irregularities. Caution shall be exercised during this test to avoid thermal shock.

4.3.8.3 Drop. Insert the applicable GFM inside the case. At ambient temperature the case shall be dropped from a height of 3 ft. to a smooth, concrete surface on each of the following orientations: the top; a side; and the flat of the bottom. At the end of the series of drops, open and close the case a minimum of five times. The case shall open close freely. The latches shall be moved from the closed to open position without undue force. Pick up the case by the handle. The handle shall be securely attached to the case. The case material shall no evidence of delamination, distortion, cracking, or other irregularities. After the test, inspect for any optical damages of the fire control optical instruments. If any damages is evident, the test shall be rejected.

4.3.8.4 Leakage. The case shall be submerged completely under the water for one hour. After the test, the case must show no evidence of water penetration.

4. 3.8.5 Fungus resistance. Subject a case to fungus resistance test per MIL-STD-810, Method 508.4 to comply with the requirement as defined in 3.8.5.

4.3.9 Marking. Visually inspect as required by 3.9.

5.0 PACKAGING

5.1 For acquisition purposes, the contract or purchase order shall specify packaging requirements (see 6.2). When DOD personnel perform material packaging, those personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. The Inventory Control Point packaging activity within the Military Department of Defense Agency, or within the Military Department's System Command, maintains packaging requirements. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6.0 NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended Use. The Carrying Cases are intended for use in storing and transporting the fire control optical instruments for the M198 and the M119 Towed Howitzers. The cases are considered a disposable (non-repairable) item.

6.2 Acquisition Requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification and any amendment thereto.
- b. Issue of the DODISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.2).
- c. The case part number and marking tables to be used.
- d. When a First Article Test is required (see 3.1, 4.3.1, and 6.3).
- e. When conformance verification is required (see 4.3.2 and 6.4).
- f. Packaging requirements (see 5.1).

6.3 First Article. When requiring a first article inspection, contracting documents should provide specific guidance to offerors. This guidance should cover whether the first article is a first article sample, a first production item, or the number of test items. These documents should also include specific instructions regarding arrangements for examinations, approval of first article test results, and disposition of first article samples. Pre-solicitation documents should provide Government waiver rights for samples for first article inspection to bidders offering a previously acquired or tested product. Bidders offering such products who wish to rely on such production testing must furnish evidence with the bid that prior Government approval is appropriate for the pending contract.

6.4 Conformance Inspection. Affordable conformance inspection with confidence varies depending upon a number of procurement risk factors. Some of these factors include: contractor past performance, government schedules and budget, product material design maturity, manufacturing capital equipment and processes applied, the controlled uniformity of those processes, labor skill and training, and the uniformity of measuring processes and techniques. During the solicitation, contracting documents should indicate those tests desired from Table II and their designated frequency based on a risk assessment for the procurement.

6.5 Drawings. For general information only, items have been produced for the same purpose as this specification using the following drawing package(s) :

11746386 - Case, Carrying (M198)

12599228 - Case, Carrying (M119)

Copies of these drawing package are available from the US Army Armaments Research Development and Engineering Center (ARDEC) AMSTA-AR-FSF-I, Picatinny Arsenal, NJ 07806-5000.

6.6 Supersession. None.